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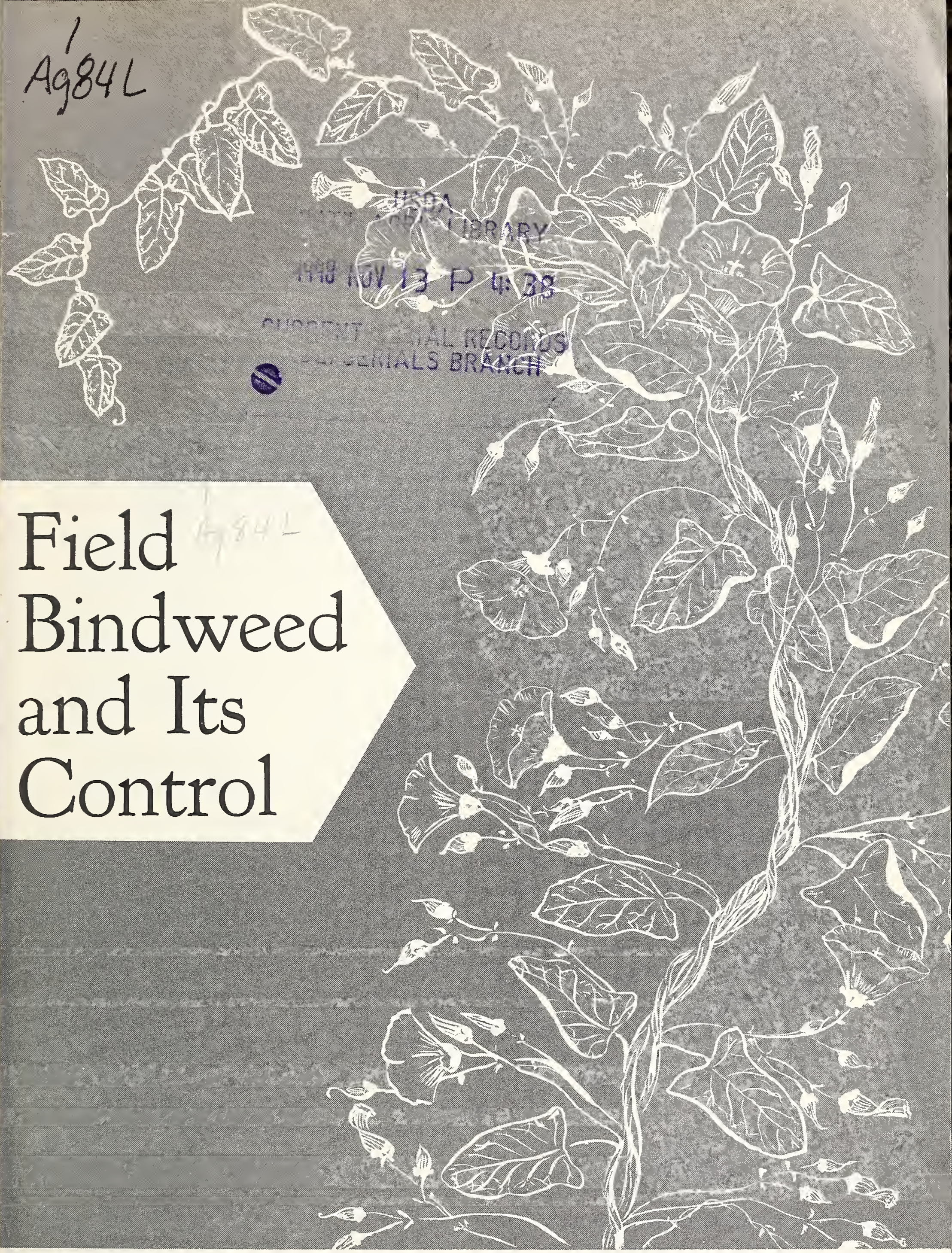

Field Bindweed and Its Control

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Field Bindweed and Its Control

By W. M. Phillips, research agronomist, Crops Research Division, Agricultural Research Service, and agronomist, Kansas Agricultural Experiment Station

Field bindweed,[1] also called creeping jenny and wild morningglory, is a drought-resistant perennial weed that has deep roots and low-growing twining stems. It is distributed over most of the United States.

Bindweed competes with crop plants for water, light, and nutrients; heavy infestations can reduce yields of winter wheat by one-third, and yields of summer-growing crops by three-fourths.

The stems of the weed wrap around crop plants and make harvesting difficult.

Bindweed spreads by lateral growth of underground parts and by seeds. The seeds are long lived; they can remain dormant in the soil, capable of starting new infestations, for more than 30 years.

The basic methods for controlling bindweed are treatment with 2,4-D (2,4-dichlorophenoxyacetic acid), intensive cultivation, competitive cropping, and soil sterilization. Control recommendations depend on—

- Climate. Is the prevailing weather humid or dry?
- Land use. Is the infestation on cropland or noncropland?
- Extent of infestation. Is it widespread, or restricted to small spots?

CONTROLLING LARGE INFESTATIONS

Humid Areas

In humid areas or on irrigated land, bindweed can be controlled easily with 2,4-D. Apply ½ to ¾ pound of acid equivalent per acre. Amine salt formulations of 2,4-D—the least expensive form—work well in these areas.

Treat the bindweed in the spring when it is in the bud stage, or in the fall when the weed begins vigorous regrowth.

One application of 2,4-D should control the weed. If the bindweed regrows, treat it again.

Dry Areas

In dry areas, 2,4-D by itself cannot be relied on to control mature stands of bindweed. In these areas, use a control program that includes intensive cultivation, treatment with 2,4-D, and competitive cropping. With such a program, mature bindweed stands usually can be killed in about 4 years.

Intensive Cultivation

Start all bindweed-control programs in dry areas with one season of intensive cultivation, or cultivation supplemented with 2,4-D.

Use cultivating equipment that cuts the bindweed shoots below

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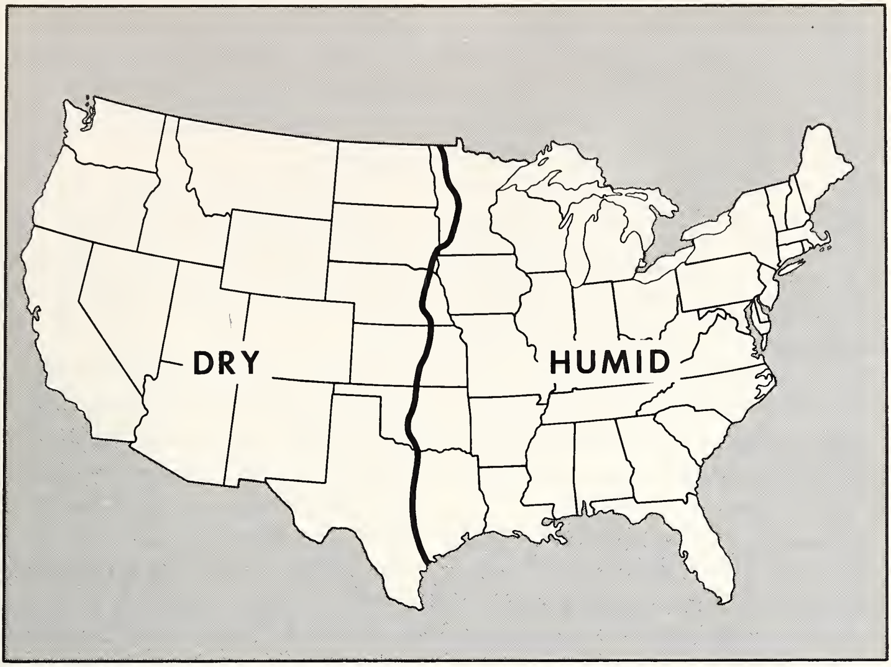
[1] *Convolvulus arvensis* L.



the surface of the soil. A duckfoot cultivator works well for this. Cultivate to a depth of 4 to 6 inches.

Begin intensive cultivation in the spring, about 2 weeks after bindweed begins to grow.

Allow bindweed to emerge and grow for 8 to 10 days before each cultivation. With this schedule, stored food material in the roots is used up more quickly than if you cultivate as soon as the weed emerges, the weed is killed sooner, and fewer cultivations are necessary.

Continue cultivation into the fall, until bindweed no longer emerges.

CAUTION: Avoid spreading bindweed seeds and roots into uninfested areas when cultivating. Clean equipment thoroughly before cultivating bindweed-free land.

Treatment With 2,4-D

Field bindweed normally is not easily killed with 2,4-D in dry areas. However, application of the herbicide is effective as a supplemental treatment with intensive cultivation. When it is used this way, 2,4-D thins the bindweed stand early in the control program and makes fewer cultivations necessary.

In dry areas, ester formulations of 2,4-D usually are best. Apply the 2,4-D ester at a rate of ¾ to 1 pound of acid equivalent per acre.

Use 2,4-D only when bindweed is growing vigorously. For best results apply 2,4-D after a short period of intensive cultivation; new growth of bindweed is more susceptible than mature growth.

If bindweed regrows after 2,4-D treatment, either treat it again or resume intensive cultivation and continue cultivation until fall.

Competitive Cropping

Competitive cropping—planting a crop that competes favorably with bindweed—can increase the effectiveness of intensive cultivation or 2,4-D treatment. Competitive crops should be vigorous growers and the plants should be closely spaced. Small grains make excellent competitive crops.

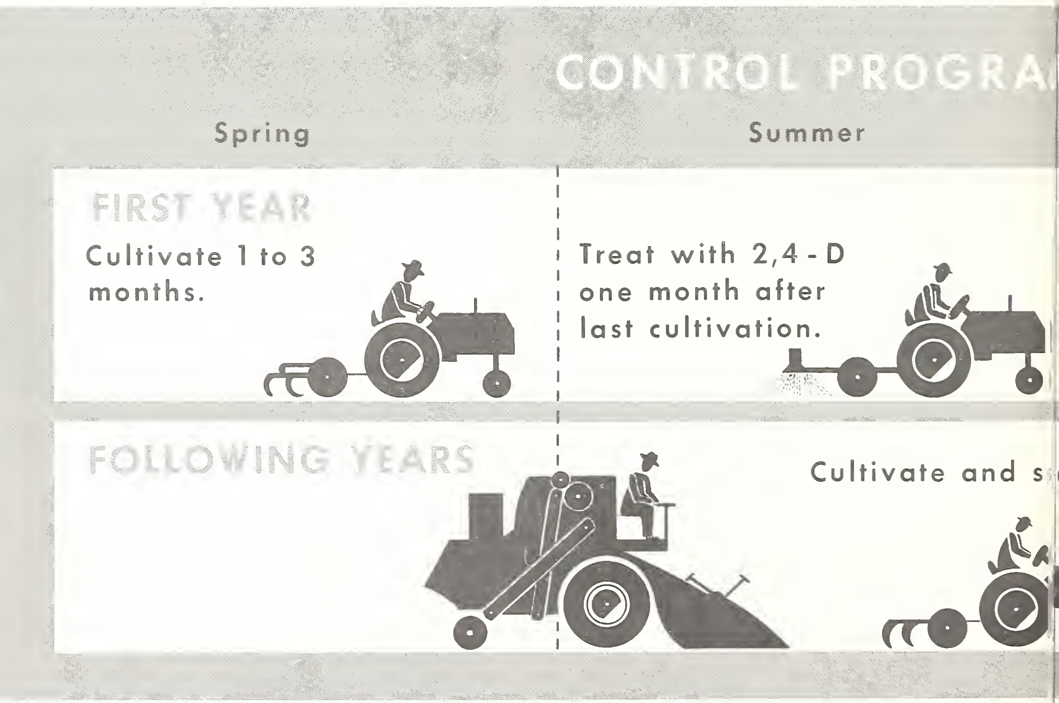
Plant a competitive crop after a season of intensive cultivation or cultivation supplemented with 2,4-D treatment.

Sequence of Methods

If your normal cropping sequence includes summer fallow, a good control program is as follows:

- Begin intensive cultivation in spring and continue until fall seeding time. Or cultivate intensively for 1 to 3 months, then spray with 2,4-D about 30 days after the last cultivation.
- In fall, seed a winter grain.
- After harvesting the grain, resume cultivation and continue through the summer until seeding time.

If you want to grow summer crops, it will be necessary to fallow the land for one season's intensive cultivation—or cultivation supplemented with 2,4-D treatment. Plant the summer-growing crop the next spring. Delay seeding until the field can be cultivated several times. If bindweed is still growing actively after harvest, resume cul-



tivation and continue into the fall until bindweed no longer emerges.

CONTROLLING SMALL INFESTATIONS

Control small infestations of field bindweed before they spread. If the weed is growing on agricultural land, treat it with 2,4-D in humid areas. In dry areas, use soil sterilants—even though they may prevent crop production for 1 year or more. If the weed is growing on nonagricultural land—along roads and fence rows or around buildings—use soil sterilants for its control in both humid and dry areas.

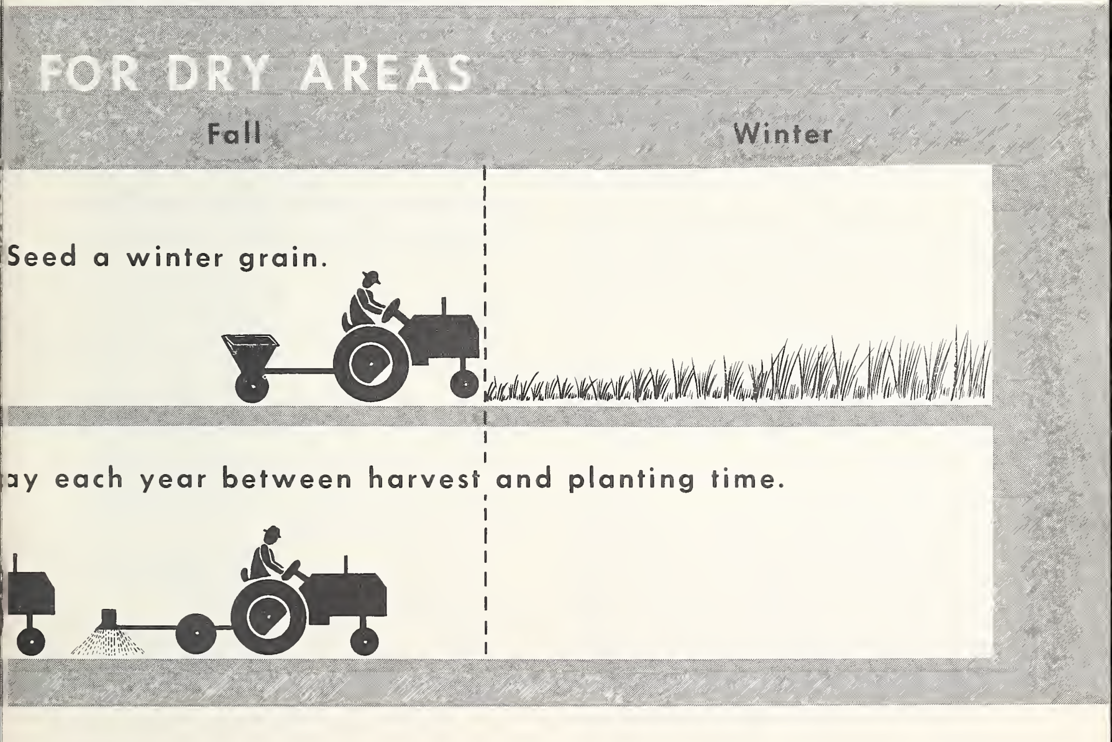
Control on Cropland

In humid areas, treat small infestations of bindweed with 2,4-D amine salt. Spray it at a rate of ½ to ¾ pound of acid equivalent of 2,4-D per acre. Apply the 2,4-D when the weed is in the bud stage.

In dry areas, sterilize the soil with 2,3,6-TBA (2,3,6-trichlorobenzoic acid); PBA (polychlorobenzoic acid); picloram (4-amino-3,5,6-trichloropicolinic acid); or with sodium chlorate.

Spray the soil with 2,3,6-TBA at a rate of 15 to 20 pounds of active ingredient per acre; PBA, at a rate of 35 to 40 pounds of active ingredient per acre; and picloram, at a rate of 2 to 4 pounds of active ingredient per acre.

These sterilants are available as liquid concentrates. Mix the concentrates with enough water to make a total of at least 40 gallons of spray per acre.


FOR DRY AREAS
Fall
Winter
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Plant a competitive crop after a season of intensive cultivation or cultivation supplemented with 2,4-D treatment.

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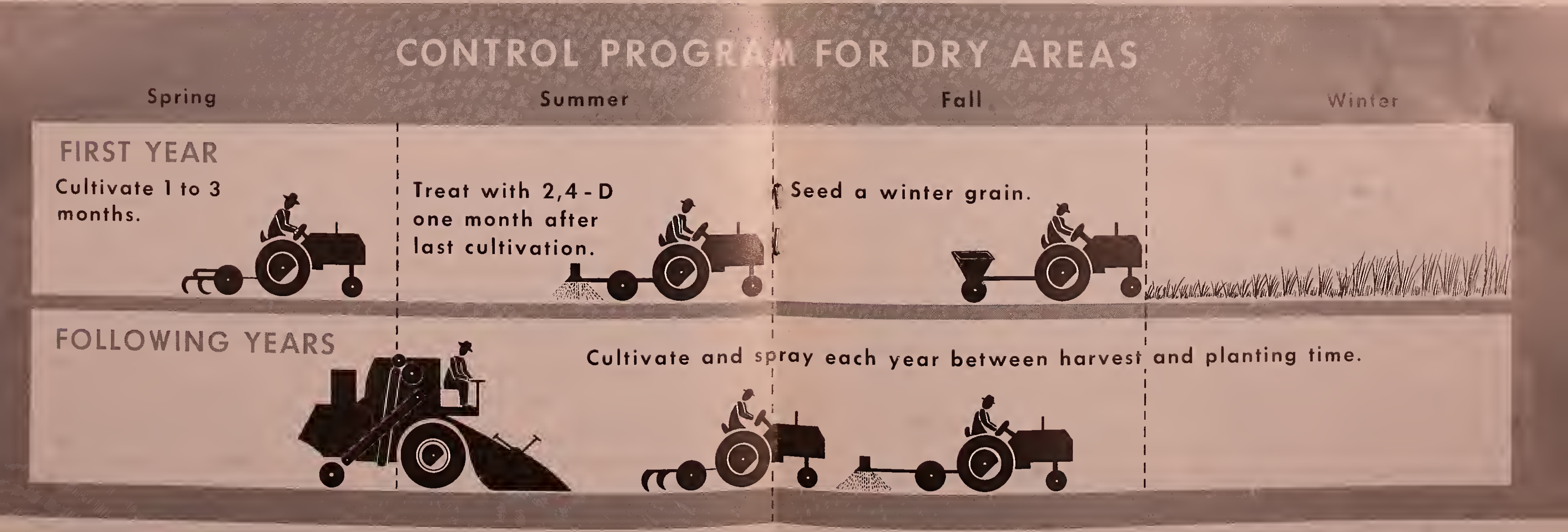

CONTROL PROGRAM FOR DRY AREAS

	Spring	Summer	Fall	Winter
FIRST YEAR	Cultivate 1 to 3 months.	Treat with 2,4-D one month after last cultivation.	Seed a winter grain.	
FOLLOWING YEARS		Cultivate and spray each year between harvest and planting time.		

Granular formulations of 2,3,6-TBA, PBA, and picloram also are available. Follow label directions when using them.

If you plan to follow soil sterilization with a broadleaf crop, sterilize the soil with sodium chlorate.

Sodium chlorate is most effective if it is applied in the fall. At that time, use 4 pounds of the dry chemical per square rod. Spring is the next best time to apply it. Use 5 pounds per square rod in the spring. In the summer, apply the chemical at a rate of 6 pounds per square rod.

Sodium chlorate reduces or prevents crop production for 2 to 4 years after it is applied.

2,4-D as a Retardant in Dry Areas

Although 2,4-D alone will not usually kill bindweed in dry areas, it may be useful for retarding the weed. Small grain crops can be sprayed with 2,4-D to prevent bindweed from interfering with harvest or from setting seed.

Apply the 2,4-D in the spring when bindweed is in the bud stage. Use no more than ½-pound acid equivalent of 2,4-D per acre when spraying small grains. At the time that bindweed is most susceptible to 2,4-D, small grain crops are also sensitive to it; applying more than the recommended amount of 2,4-D may injure the grain excessively.

Control on Noncropland

For controlling bindweed infestations on noncropland in humid areas, spray the weed annually with 2,4-D. Or where killing of all vegetation is not objectionable, treat the soil with one of the following:

- Borate compounds.
- Borate-sodium chlorate mixtures.
- Monuron (3-(4-chlorophenyl)-1,1-dimethylurea).
- Fenuron (3-phenyl-1,1-dimethylurea).
- PBA.
- 2,3,6-TBA.
- Fenac (2,3,6-trichlorophenylacetic acid).
- Picloram.

In dry areas, treat noncropland with sodium chlorate, 2,3,6-TBA, PBA, fenac, or picloram. In these areas monuron, fenuron, borates, and borate-chlorate mixtures tend to give erratic results; they need relatively high levels of soil moisture to work most efficiently. However, these materials are not leached from the soil readily where rainfall is scanty, and they may remain active for many years.

Apply sodium chlorate, 2,3,6-TBA, PBA, and picloram at the same rates as for cropland—4 to 6 pounds of sodium chlorate per square rod, 15 to 20 pounds of 2,3,6-TBA per acre, 35 to 40 pounds of PBA per acre, or 2 to 4 pounds of picloram per acre.

Apply fenac at 15 to 20 pounds of active ingredient per acre.

Borate compounds are available in several forms. Follow directions on the container label.

Apply borate-sodium chlorate mixtures at a rate of 8 to 10 pounds per square rod.

Apply monuron and fenuron at a rate of ¼ to ½ pound of active ingredient per square rod.

Monuron and fenac are practical to use on noncropland because they prevent the growth of vegetation for a long period without the expense of retreating.

SEEDLING CONTROL

Bindweed seedlings may continue to emerge for many years after the original stand is killed. Seedlings are easier to control than mature plants. Try to prevent their emergence. If they emerge, kill them before they mature.

Emergence of bindweed seedlings can be prevented by the planting of competitive crops. Close-drilled annual crops seem to exclude bindweed seedlings better than other crops. Row crops, such as grain sorghum, cannot be grown in consecutive years without danger of reinfestation.

A good plan is to plant winter wheat and close-drilled sorghum in alternate years, or rotate wheat, row sorghum, and summer fallow. In programs that include summer fallow, cultivate at least once a month during the growing season while the land is fallowed.

An application of ¼ to ½ pound of acid equivalent of 2,4-D per acre can be substituted for some of the cultivations. Bindweed seedlings are very susceptible to 2,4-D.

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Field bindweed wrapped around sorghum plant.

Normally, thin or spotted stands of competitive crops should be destroyed; a good stand is essential for seedling control. The crop then should be replanted or the field should be summer fallowed that season.

However, if the competitive crop is one that is not sensitive to 2,4-D, the bindweed seedlings may be killed by an application of the herbicide. Use ¼- to ½-pound acid equivalent per acre.

The same rate of application can be used on stands of perennial grasses. Perennial grasses usually develop competition too slowly to retard field bindweed seedlings. If the stand is treated periodically with 2,4-D, however, bindweed seedlings will be killed. The grass stand then can grow thickly enough to exclude new seedlings.

PRECAUTIONS

Chemicals recommended in this publication are hazardous to use under some conditions. Read the container labels carefully; follow all precautions and directions for the use of the chemicals.

To avoid residues in food and feed crops, do not harvest any plants from sterilized areas in fields until all of the sterilant has dissipated from the soil. This frequently takes 2 to 3 years, and may require more. Crops and weed plants that survive in treated areas should not be harvested for feed or food until after all plants have been observed to grow normally in the treated areas. Grass crops are more tolerant than broadleaf crops to 2,3,6-TBA, PBA, and picloram; but are less tolerant to sodium chlorate.

The borate compounds and the substituted urea compounds, monuron (3-(p-chlorophenyl)-1,1-dimethylurea) and fenuron (3-phenyl-1,1-dimethylurea), prevent the growth of most plants on treated soil for 2 to 5 years. Do not use these materials on croplands.

Sodium chlorate is a fire hazard; clothing, dry vegetation, unpainted boards, and other flammable materials will ignite easily and burn vigorously after they have been wetted with sodium chlorate solution.

Apply sodium chlorate as a dry chemical. Be careful that the chemical does not collect on vegetation or in clothing. Do not wear gloves while handling chlorate. Do not spill it where there is flammable litter.

In addition to being a fire hazard, sodium chlorate is poisonous to livestock if they consume it in large quantities. Do not let livestock range over areas that have been treated recently with sodium chlorate, or other herbicides.

To protect water resources, fish, and wildlife, do not contaminate lakes, streams, or ponds with pesticides. Do not clean spraying equipment or dump excess spray material near such water. Avoid drift of pesticides to nearby bee yards, crops, or livestock. Dispose of empty pesticide containers at a sanitary land-fill dump, or bury them at least 18 inches deep in a level, isolated place where they will not contaminate water supplies.

PROTECT

Use Pesticides Safely

FOLLOW THE LABEL

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